

Management of CBM-Produced Water:
***EXISTING SEO RELEVANT
AUTHORITIES
AND POTENTIAL ADDITIONAL SEO
WATER MANAGEMENT STRATEGIES***

*Patrick T. Tyrrell, State Engineer
Presentation to Coalbed Natural Gas Water Task Force
May 30, 2007*

Letter from Chairman Childers dated 3/29/07

“...the CBM TF requests that the WSEO prepare a report or presentation regarding WSEO’s general and specific statutory and constitutional authority to manage the quantity of surface discharged CBM produced water in the State of Wyoming. In particular, the CBM TF is interested in learning from WSEO what mechanisms WSEO does and could employ to protect downstream uses from impacts related to the quantity of discharged CBM water.”

CONSTITUTION OF THE STATE OF WYOMING

ARTICLE 1 - Sec. 31. Control of water. Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the state, which, in providing for its use, shall equally guard all the various interests involved. (Emphasis added)

CONSTITUTION OF THE STATE OF WYOMING

ARTICLE 8 - Sec. 1. Water is state property. The water of all natural streams, springs, lakes or other collections of still water, within the boundaries of the state, are hereby declared to be the property of the state.

CONSTITUTION OF THE STATE OF WYOMING

ARTICLE 8 - Sec. 2. Board of control. There shall be constituted a board of control, to be composed of the state engineer and superintendents of the water divisions; which shall, under such regulations as may be prescribed by law, have the supervision of the waters of the state and of their appropriation, distribution and diversion, and of the various officers connected therewith. Its decisions to be subject to review by the courts of the state. (Emphasis added)

CONSTITUTION OF THE STATE OF WYOMING

ARTICLE 8 - Sec. 5. State engineer. There shall be a state engineer who shall be appointed by the governor of the state and confirmed by the senate; he shall hold his office for the term of six (6) years, or until his successor shall have been appointed and shall have qualified. He shall be president of the board of control, and shall have general supervision of the waters of the state and of the officers connected with its distribution. No person shall be appointed to this position who has not such theoretical knowledge and such practical experience and skill as shall fit him for the position. (Emphasis added)

Wyoming State Supreme Court language recognizing discretion in the use of the broad constitutional powers:

“Section 5 of Article VIII, vests the state engineer with ‘general supervision of the waters of the state.’ We do not think that this provision was intended to give him an unlimited and uncontrolled authority thereover, and § 41-4.1, W.S.1957, 1975 Cum.Supp., relating to change of use, refers only to the board.” *State ex rel. Christopulos v. Husky Oil of Delaware*, 575 P.2d 262, 263 n.6 (Wyo. 1978) (Emphasis added)

W. S. § 41-3-504. Superintendents; powers generally.

Said division superintendent shall have authority to order, in writing, the construction of suitable ditches to carry the return waters from any ditch or lands to the main stream or proper waste way; he shall have the authority, and it shall be his duty, to close or cause to be closed the headgate of any person, persons or corporation so ordered, until such time as said order is complied with; he shall have authority to instruct the water commissioners in his division to brand, number or mark the headgate of any and all canals, ditches, laterals and reservoir outlets in such manner that the owner or owners of said canals, ditches, laterals or reservoir outlets may be readily determined; he shall, in the distribution of water, be governed by the provisions of law relating to water rights, but for the better discharge of his duties, he shall have authority to make such other regulations to secure the equal and fair distribution of water in accordance with the rights of priority of appropriation as may, in his judgment, be needed in his division; provided, such regulations shall not be in violation of the laws of the state, but shall be merely supplementary to and necessary to enforce the provisions of the general laws and amendments thereto. (Emphasis added)

W. S. § 41-3-603. Commissioners; general powers and duties; appeals from decisions.

(a) The water commissioner shall, as near as may be practicable, divide, regulate and control the use of the water of all streams, springs, lakes or other sources of water within his district as will prevent the waste of water or its use in excess of the volume to which the appropriator is lawfully entitled. The water commissioner has the authority to require the filling of any reservoir whenever practical and whenever water is available for storage from the stream from which the appropriation is established.

(b) Any person who may be injured by the action or inaction of the water commissioner has the right to appeal to the division superintendent and, from his decision, the person aggrieved may appeal to the state engineer. From the decision of the state engineer, an appeal may be taken to the district court of the county where the ditch or ditches, reservoir, well or wells over which the controversy arises are situated.

(Emphasis added)

W. S. § 41-3-903. By-product water; definition.

By-product water is water which has not been put to prior beneficial use, and which is a by-product of some nonwater-related economic activity and has been developed only as a result of such activity. By-product water includes, but is not limited to, water resulting from the operation of oil well separator systems or mining activities such as dewatering of mines. (Emphasis added)

W. S. § 41-3-909. State engineer; powers generally. *(Ground Water Statutes)*

(a) In the administration and enforcement of this act [41-3-901 through 41-3-938] and in the effectuation of the policy of the state to conserve its underground water resources, the state engineer is authorized and empowered on advice and consent of the board of control:

- (i) To prescribe such rules and regulations as may be necessary or desirable to enable him to efficiently administer this act;

.....

- (x) To bring suit to enjoin the construction of illegal wells or the withdrawal or use of water therefrom, or to enforce any of the provisions of this act or of orders issued thereunder, and to intervene in any action or proceeding when it appears that the determination of such action or proceeding may result in the depletion of underground water resources of the state contrary to the policy expressed in this act.

W. S. § 41-3-911. Authority to order interfering appropriator to cease withdrawals of water; hearing complaints by appropriators.

(a) Whenever a well withdrawing water for beneficial purposes shall interfere unreasonably with an adequate well developed solely for domestic or stock uses as defined in W.S. 41-3-907, whether in a control area or not, the state engineer may, on complaint of the operator of the stock or domestic well, order the interfering appropriator to cease or reduce withdrawals of underground water, unless such appropriator shall furnish at his own expense, sufficient water at the former place of use to meet the need for domestic or stock use. In case of interference between two (2) wells utilizing water for stock or domestic use as defined in W.S. 41-3-907, the appropriation with the earliest priority shall have the better right. (Emphasis added)

(b) Any appropriator of either surface or underground water may file a written complaint alleging interference with his water right by a junior right. Complaints are to be filed with the state engineer and are to be accompanied by a fee of one hundred dollars (\$100.00) to help defray costs of investigation. This section is not applicable to interference between two (2) surface water rights. Upon receiving the complaint and fee, the state engineer shall undertake an investigation to determine if the alleged interference does exist. Following the investigation, the state engineer shall issue a report to all interested parties stating his findings. The report may suggest various means of stopping, rectifying or ameliorating the interference or damage caused thereby. (Emphasis added)

(c) Any interested appropriator who is dissatisfied with the results of the foregoing procedure may proceed under the applicable provisions of the Wyoming Administrative Procedure Act [16-3-101 through 16-3-115]. If a hearing is to be held, it shall be held before the appropriate water division superintendent. The superintendent shall report to the board of control at its next meeting. The board shall issue its order to include findings of fact and conclusions of law.

W. S. § 41-3-931. Application; when granted generally; denial subject to review; defects and corrections generally; cancellation.

(applies to Ground Water)

An application for a permit for a well in any areas not designated as a critical area shall be granted as a matter of course, if the proposed use is beneficial and, if the state engineer finds that the proposed means of diversion and construction are adequate. If the state engineer finds that to grant the application as a matter of course, would not be in public's water interest, then he may deny the application subject to review at the next meeting of the state board of control. If the state engineer shall find that the proposed means of diversion or construction are inadequate, or if the application is otherwise defective, he may return the application for correction. If such correction is not made within ninety (90) days, the state engineer may cancel the application. (Emphasis added)

W. S. § 41-3-933. Express conditions limiting rights of appropriator; additional conditions.

It is an express condition of each underground water permit that the right of the appropriator does not include the right to have the water level or artesian pressure at the appropriator's point of diversion maintained at any level or pressure higher than that required for maximum beneficial use of the water in the source of supply. The state engineer may issue any permits subject to such conditions as he may find to be in the public interest. (Emphasis added)

W. S. § 41-4-503. Recordation; approval or rejection generally.

All applications which shall comply with the provisions of this chapter, and with the regulations of the engineer's office, shall be recorded in a suitable book kept for that purpose; and it shall be the duty of the state engineer to approve all applications made in proper form, which contemplate the application of the water to a beneficial use and where the proposed use does not tend to impair the value of existing rights, or be otherwise detrimental to the public welfare. But where there is no unappropriated water in the proposed source of supply, or where the proposed use conflicts with existing rights, or threatens to prove detrimental to the public interest, it shall be the duty of the state engineer to reject such application and refuse to issue the permit asked for. (Emphasis added)

Case Law Regarding Maximizing the Beneficial Use of the State's Water

Under our system of appropriation beneficial use is the sole and only basis therefor. *Budd v. Bishop, Wyo.*, 543 P.2d 368, 373 (1975); *Ide v. United States*, 263 U.S. 497, 44 S.Ct. 182, 68 L.Ed. 407 (1924) and s 41-3-101, W.S.1977. Priorities are also dependent thereon s 3, Art. 8, Wyoming Constitution. If this court were to hold that the powers of the Board of Control are strictly limited to those as prescribed or set out specifically by the legislature, we would deny them the authority and the right of supervision of the waters of this state, their appropriation, distribution and diversion and thus defeat a clearly stated constitutional objective. The Board must, in order to insure proper administration and use of our water be said to possess such powers as will insure the maximum beneficial use of all water, without regard to its source. The determination of the State Engineer and the Board of what use will better utilize the water and insure its beneficial use must be respected by this court, because the Board and State Engineer are better equipped to dispose of such matters. (Emphasis added)

John Meier & Son, Inc. v. Horse Creek Conservation Dist. of Goshen County, 603 P.2d 1283, *1288 (Wyo., 1979)

CBM Water Policies

Ground Water Division

March 2004	Guidance: CBM/Ground Water Permits
June 2005	Guidance: CBM Ground Water for Reservoir Supply

Surface Water Division

October 2002	Permitting Requirements Associated With Off-Channel Containment Pits
April 2004	Permitting Requirements for Water Produced During the Recovery of CBNG
April 2004	Guidance Flow Chart for Permitting CBM Produced Water
May 2004	Water Administration Plan Guidelines
March 2005	Well Lists (No longer required for SW Reservoirs)

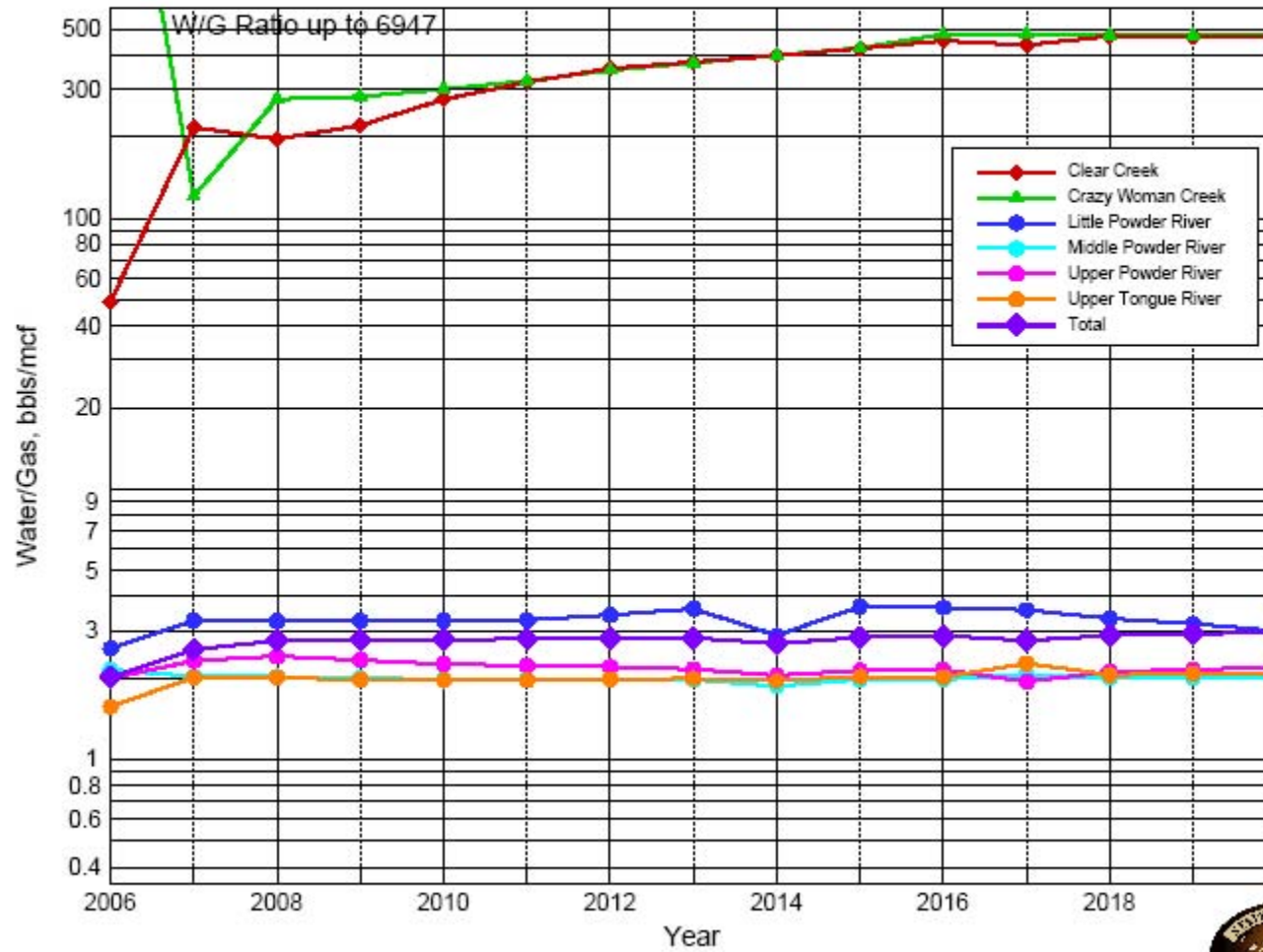
The following slides were provided by the Wyoming Geological Survey. In general, they indicate areas of very high water/gas ratio production. In particular, the WGS provides the following estimates for future gas production in the Clear Creek and Crazy Woman Creek drainages for 2007-2020:

Planned new wells:	10,660 (25.4% of PRB wells)
Estimated Cumulative gas:	8,021,294 mcf (0.14% of total gas)
Estimated Cumulative Water:	3.25 billion bbls (20.9% of total water) (W/G ratio of 400+)

These data are important in informing the SEO about water production variations in the development of CBM resources, and is helpful in defining metrics for protecting the ground water resource.

Draft Work Product

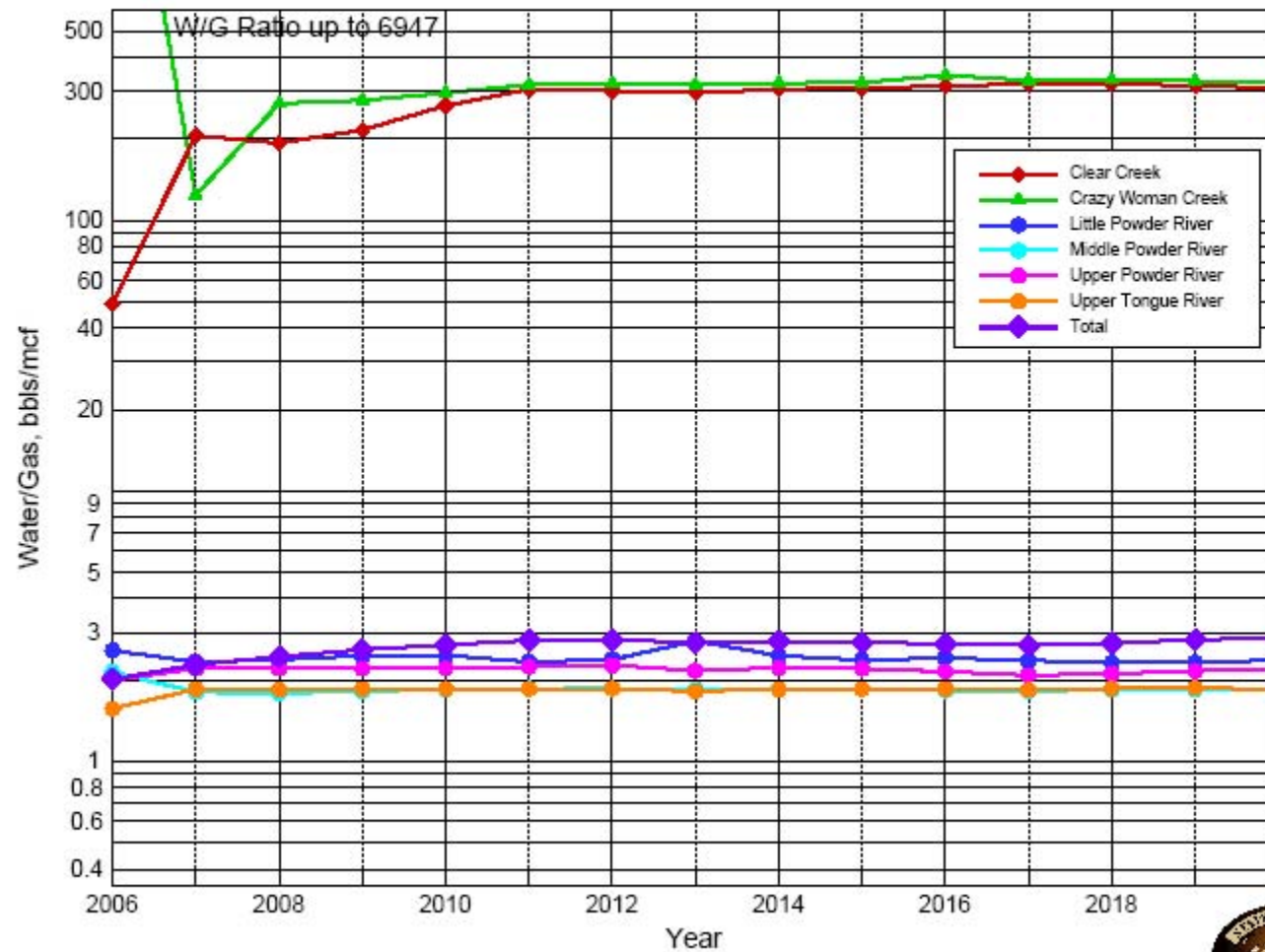
Estimated Water/Gas ratio for Each Drainage, Powder River Basin
Assuming 10 year well life



5/30/2007

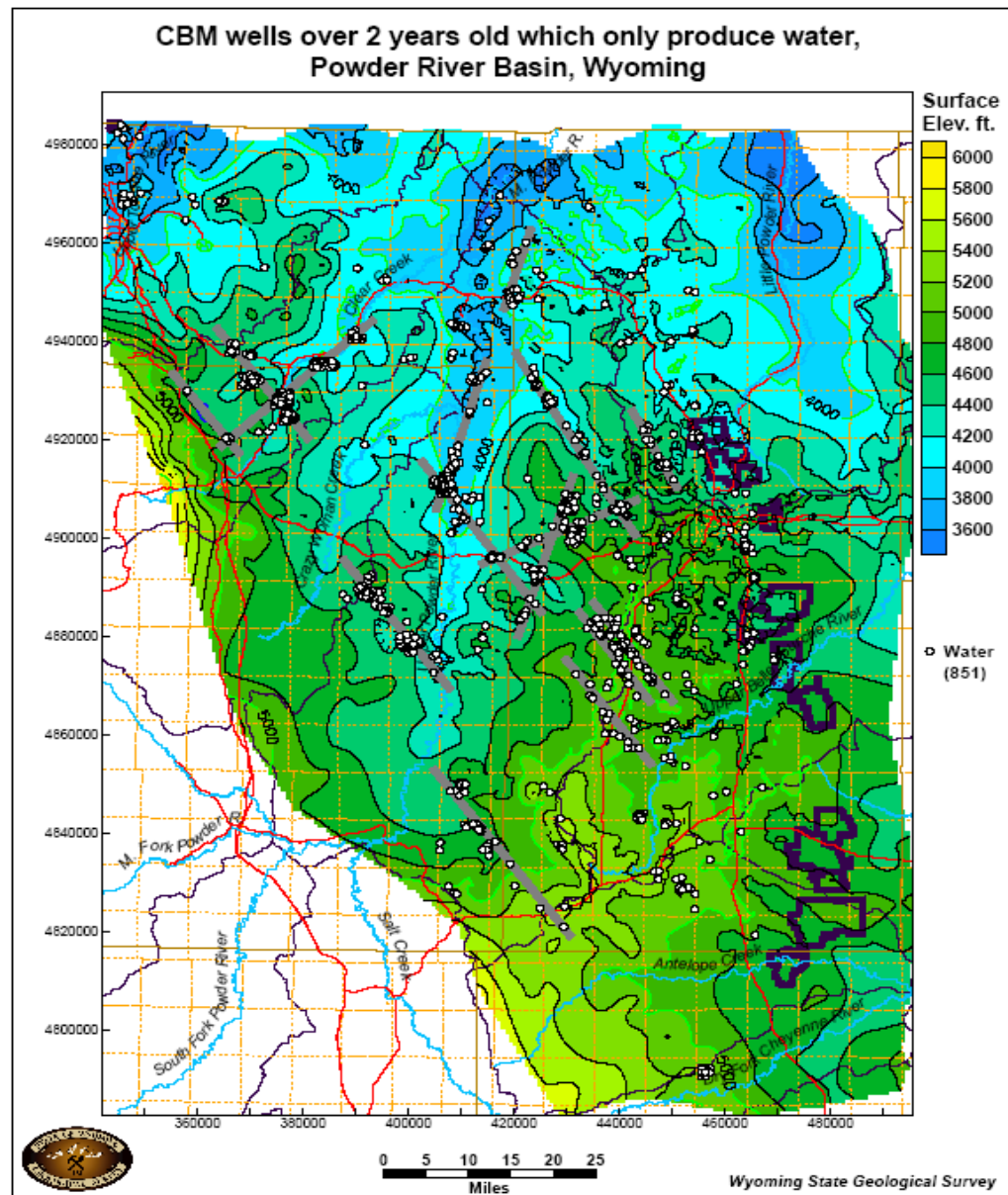
Draft Work Product

Estimated Water/Gas ratio for Each Drainage, Powder River Basin
Assuming 5 year well life



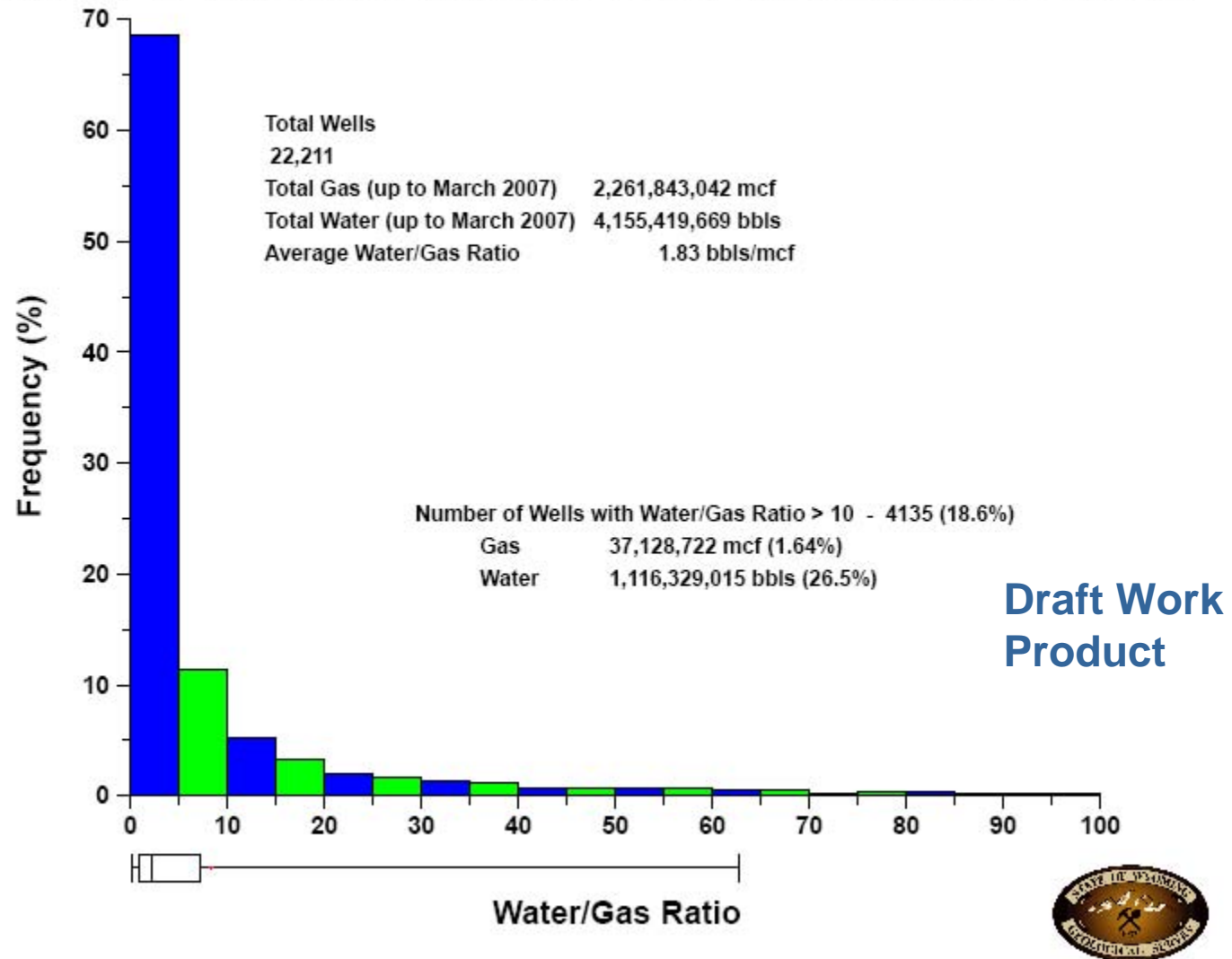
5/30/2007

Draft Work Product



5/30/2007

Histogram of Water/Gas Ratio for Wells Over 2 Years Old, PRB



5/30/2007

Potential CBM Water Quantity Management Strategies

- Conserve the ground water resource
 - Manage the production of ground water
 - Establish a threshold water/gas ratio or;
 - Time of pumping of water (with little or no gas) for beneficial use determination
 - Limits and conditions on well permits
- Manage and mitigate downstream water impacts
 - Require sufficient channel capacity on downstream lands (similar to W.S. 41-3-504)
 - Limit in-basin discharges to existing channel capacity (remaining water to be handled by other means)
- Other?

Potential Areas for Change:

Statutory Strategies:

1. Add a new section like W. S. § 41-3-504 (perhaps 507) that targets maintenance of channel capacity;
2. Add a new section (perhaps W. S. § 41-3-116) that makes it illegal to discharge water in excess of channel capacity. This would need option #1 to exist to assure capacity in areas with little evidence of a channel;

Policy/Permit Condition Strategies (well permit conditions):

1. Condition to add a time limit to commercial production of gas (or a threshold water/gas ratio); show cause how production characteristics such as no gas, or high water/gas ratio, should be allowed to continue;
2. Condition to establish beneficial use for a specified period, after which gas production with a threshold water/gas ratio must be maintained.

Draft Language for Discussion (new section)

W. S. § 41-3-507 Management of water produced from coal bed natural gas operations.

Discharge of produced water from coal bed natural gas operations into a natural watercourse shall be limited to the downstream capacity of the natural channel as determined by the state engineer or his authorized representative. In locations where the existing capacity of a natural channel is diminished for any reason, the superintendent of the water division within which the channel exists shall have the authority to order the necessary work for restoring or achieving such capacity prior to discharge from the gas production operations. It shall be the responsibility of the party or parties discharging, or desiring to discharge, produced water to undertake the restoration work, including landowner compensation.

Draft Language for Discussion (new section)

41-3-116 Water produced from coal bed natural gas operations – activities prohibited.

It shall be illegal for the quantity of water discharged from individual or combined coal bed natural gas operations to exceed the downstream capacity of the natural channel into which the discharge occurs, such capacity to be determined by the state engineer or his authorized representative. Any violation of this section shall be punishable pursuant to W.S. 41-3-616.

(Note: Would require reference of this section in W.S. 41-3-616)

Draft Permit Conditions for discussion

Existing Permit Condition:

8. This permit will be reviewed in five (5) years from the date of approval.

Potential Revision:

8. This permit will be reviewed in ____ years from the date of ***first water production. In the event the Water/Gas ratio exceeds ____ bbl/mcf at the end of that period, to keep this permit in good standing, the permittee shall be required to show cause how gas production is intended to occur in furtherance of the beneficial use for which this permit is issued.***

Draft Permit Conditions for discussion

9. No Proof of Appropriation and Beneficial Use of Ground Water form is required under this permit for the production of water associated with the production of natural gas. Beneficial use of ground water for the production of natural gas will be assumed ***to exist for a period of ____ years following the first production of water from this well. After this ____ years, production of natural gas, at a water/gas ratio not to exceed ____ bbl/mcf, is necessary for compliance with CBM uses on this permit . (Previous language established beneficial use at the time of well completion, with no further test.)***

In the event that water from this well is beneficially utilized for some purpose after natural gas production has ceased, the permittee is required to submit the appropriate form(s) and documentation, as determined by the State Engineer, pertinent to the remaining use(s) specified under this permit. Such form(s) and documentation shall be submitted to the State Engineer within two (2) years of the cessation of natural gas production.

Thank you.